

GRADE 4

Number and Operations in Base Ten

Trimester 1

	Common Core State Standard	Assessment	Resources	Vocabulary
	<p>Generalize place value understanding for multi-digit whole numbers. CCSS.Math.Content.4.NBT.A.1 Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. <i>For example, recognize that $700 \div 70 = 10$ by applying concepts of place value and division.</i></p>	CCSS Math Assessment Pack NBT 1	Investigations Unit 5	place value standard form expanded notation re-group expression digit value word form
	<p>CCSS.Math.Content.4.NBT.A.2 Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based</p>	CCSS Math Assessment Pack NBT 2	Investigations-Unit 5 Teacher-made materials	Greater than Less than Equal to Compose Decompose

	on meanings of the digits in each place, using $>$, $=$, and $<$ symbols to record the results of comparisons.			
	4.NBT.A3 Use place value understanding to round multi-digit whole numbers to any place	CCSS Math Assessment Pack NBT 3	Investigations-Unit 5	Number line
	4.NBT.B4 Fluently add and subtract multi-digit whole numbers using the standard algorithm.*followed by 4.OA.A1	CCSS Math Assessment Pack NBT 4	Investigations-Unit 5	Addend Difference Sum Algorithm
	4.NBT.B5 Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.	Pearson Successnet Unit 1	Investigations-Unit 1	Rows Columns Array Distributive Property Partial product Factor Area Product
	4.NBT.B6 Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or	Pearson Successnet Unit 2	Investigations-Unit 8	Divisibility Divisor Partitive division Remainder Quotient

	area models.*complete trimester with OA.A3 and OA.C5			
--	--	--	--	--

Operations and Algebraic Thinking

	Common Core State Standard	Assessment	Resources	Vocabulary
	<p>Use the four operations with whole numbers to solve problems.</p> <p>CCSS.Math.Content.4.OA.A.1</p> <p>Interpret a multiplication equation as a comparison, e.g., interpret $35 = 5 \times 7$ as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.</p>	<p><i>CCSS Math Assessment Pack</i></p> <p><i>OAT1</i></p>	<p><i>Investigations –Unit 3</i></p>	<p>Associative Property</p>
	<p>CCSS.Math.Content.4.OA.A.2</p> <p>Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and</p>	<p><i>CCSS Math Assessment Pack</i></p> <p><i>OAT2</i></p>	<p><i>Investigations-Unit 3</i></p>	<p>Variable</p>

	equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison. ¹			
	<p>CCSS.Math.Content.4.OA.A.3</p> <p>Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.</p>	<p><i>CCSS Math Assessment Pack OAT3</i></p>	<p><i>Investigations-Unit 8</i></p>	<p>Estimate</p>
	<p>Gain familiarity with factors and multiples.</p> <p>CCSS.Math.Content.4.OA.B.4</p> <p>Find all factor pairs for a whole number in the range 1-100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1-100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1-100 is prime or composite.</p>	<p><i>CCSS Math Assessment Pack OAT4</i></p>	<p><i>Investigations-Unit 3</i></p>	<p>Composite number Prime number</p>

	<p>Generate and analyze patterns. CCSS.Math.Content.4.OA.C.5 Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. <i>For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.</i></p>	<p>CCSS Math Assessment Pack 0AT5</p>	<p>Teacher-made materials Reasoning About Algebra Math to Know</p>	<p>Term Pattern function</p>
--	--	--	---	---

.Resources:

EngageNY: Grade 4 Module 1: Place Value, Rounding, and Algorithms for Addition and Subtraction

EngageNY:Grade 4 Module 3: Multi-Digit Multiplication and Division

Websites: http://harcourtschool.com/activity/elab2004/gr4/index_2004.html

<http://harcourtschool.com/activity/elab2004/gr4/7.html>

http://www.abcya.com/place_value_hockey.htm

<http://www.math-play.com/rounding-numbers-pirate/rounding-numbers-pirate.html>

Number and Operations in Fractions

Trimester 2

	Common Core State Standard	Assessment	Resources	Vocabulary
	<p>Extend understanding of fraction equivalence and ordering. CCSS.Math.Content.4.NF.A.1 Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions</p>	<p><i>Engage New York Module 5 Lessons 5-10 Exit Tickets</i></p>	<p><i>Engage NY Module 5 Fraction Equivalence, Ordering, and Operations</i></p>	<p>Equivalent fractions Equal intervals Numerator Denominator</p>

	themselves are the same size. Use this principle to recognize and generate equivalent fractions.			
	CCSS.Math.Content.4.NF.A.2 Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as $\frac{1}{2}$. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual fraction model.	Engage New York Module 5 Lessons 12-15 Exit Tickets	Engage NY Module 5 Fraction Equivalence, Ordering, and Operations	Ordering Unit fraction Fraction greater than one (improper fraction) Mixed number
	Build fractions from unit fractions. CCSS.Math.Content.4.NF.B.3 Understand a fraction $\frac{a}{b}$ with $a > 1$ as a sum of fractions $\frac{1}{b}$.	Engage New York Module 5 Lessons 1-4 Exit Tickets		Non-unit fraction Decompose Fractional unit
	CCSS.Math.Content.4.NF.B.3.a Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.			
	CCSS.Math.Content.4.NF.B.3.b Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual	Engage Y Module 5 Exit Tickets Lessons 16-21	Engage NY Module 5 Fraction Equivalence, Ordering, and Operations	Compose

	fraction model. <i>Examples:</i> $3/8 = 1/8 + 1/8 + 1/8$; $3/8 = 1/8 + 2/8$; $2 \frac{1}{8} = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8$.			
	CCSS.Math.Content.4.NF.B.3.c Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction.	Module 5 Exit Tickets Lessons 22-28	Engage NY Module 5 Fraction Equivalence, Ordering, and Operations	Like (common) denominator
	CCSS.Math.Content.4.NF.B.3.d Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.	Module 5 Exit Tickets Lessons 39	Engage NY Module 5 Fraction Equivalence, Ordering, and Operations	
	CCSS.Math.Content.4.NF.B.4 Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.	Module 5 Exit Tickets Lessons 37-38	Engage NY Module 5 Fraction Equivalence, Ordering, and Operations	Factor product
	CCSS.Math.Content.4.NF.B.4.a Understand a fraction a/b as a multiple of $1/b$. For example, use a visual fraction model to represent $5/4$ as the product $5 \times (1/4)$, recording the conclusion by the equation $5/4 = 5 \times (1/4)$.	Module 5 Exit Tickets Lessons 35-36	Engage NY Module 5 Fraction Equivalence, Ordering, and Operations	multiply

	<p><u>CCSS.Math.Content.4.NF.B.4.b</u> Understand a multiple of a/b as a multiple of $1/b$, and use this understanding to multiply a fraction by a whole number. <i>For example, use a visual fraction model to express $3 \times (2/5)$ as $6 \times (1/5)$, recognizing this product as $6/5$. (In general, $n \times (a/b) = (n \times a)/b$.)</i></p>	Engage New York Module 5 End-of-Module Assessment	Engage NY Module 5 Fraction Equivalence, Ordering, and Operations	
	<p><u>CCSS.Math.Content.4.NF.B.4.c</u> Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. <i>For example, if each person at a party will eat $3/8$ of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?</i></p>	Engage New York Module 5 End-of-Module Assessment	Engage NY Module 5 Fraction Equivalence, Ordering, and Operations	
	<p>Understand decimal notation for fractions, and compare decimal fractions.</p> <p><u>CCSS.Math.Content.4.NF.C.5</u> Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100.² <i>For example, express $3/10$ as $30/100$, and add $3/10 + 4/100 = 34/100$.</i></p>	Investigations Unit 6 End-of Unit Assessment	Investigations Unit 6 Investigation 3	Decimal Decimal fraction Decimal point

	<p><u>CCSS.Math.Content.4.NF.C.6</u> Use decimal notation for fractions with denominators 10 or 100. <i>For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 on a number line diagram</i></p>	Investigations Unit 6 End-of Unit Assessment	<i>Investigations Unit 6 Investigation 3</i>	Decimal expanded form
	<p><u>CCSS.Math.Content.4.NF.C.7</u> Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual model.</p> <p>¹ Grade 4 expectations in this domain are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.</p> <p>² Students who can generate equivalent fractions can develop strategies for adding fractions with unlike denominators in general. But addition and subtraction with unlike denominators in general is not a requirement at this grade</p>	Investigations Unit 6 End-of Unit Assessment	<i>Investigations Unit 6 Investigation 3</i>	Tenths hundredths

Measurement and Data

Trimester 3

	Common Core State Standard	Assessment	Resources	Vocabulary
	<p>Solve problems involving measurement and conversion of measurements. CCSS.Math.Content.4.MD.A.1 Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. <i>For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), ...</i></p>	<p><i>Engage NY Module 2 Exit Tickets Lessons 1-3</i></p>	<p><i>Engage New York Module 2 Unit Topic A Metric Unit Conversions</i></p>	<p>Convert Kilometer Mass Milliliter Capacity Distance Kilogram Liter Meter Weight</p>
	<p>CCSS.Math.Content.4.MD.A.2 Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems</p>	<p><i>Engage New York Module 2 End-of-Module Assessment Task</i></p>	<p><i>Engage New York Module 2 Unit Topic B Application of Metric Unit Conversions</i></p>	<p>Mixed units</p>

	<p>involving simple fractions or decimals, and problems that require expressing <i>Investigations Unit 4 End-of-Unit Assessment</i> measurements given in a larger unit in terms of a smaller unit. Represent <i>Investigations Unit 4 End-of-Unit Assessment</i> measurement quantities using diagrams such as number line diagrams that feature a measurement scale.</p>			
	<p>CCSS.Math.Content.4.MD.A.3 Apply the area and perimeter formulas for rectangles in real world and mathematical problems. <i>For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.</i></p>	<p><i>Investigations Unit 4 End-of-Unit Assessment</i></p>	<p><i>Investigations Unit 4, Investigation 4 Finding and Understanding Area</i></p>	<p>Area Perimeter Linear measurement Square foot</p>
	<p>Represent and interpret data. CCSS.Math.Content.4.MD.B.4 Make a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$). Solve problems involving addition and subtraction of fractions by using information presented in line plots. <i>For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection</i></p>	<p><i>Engage New York Module 5 Lesson 40 Exit Ticket</i></p>	<p><i>Engage New York Module 5, Topic H</i></p>	<p>Line plot</p>

	<p>Geometric measurement: understand concepts of angle and measure angles.</p> <p>CCSS.Math.Content.4.MD.C.5</p> <p>Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement:</p>		<p><i>Investigations Unit 4; Investigation 3</i></p>	<p>Angles Rays Segments vertex</p>
	<p>CCSS.Math.Content.4.MD.C.5.a</p> <p>An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through $\frac{1}{360}$ of a circle is called a "one-degree angle," and can be used to measure angles</p>	<p><i>Investigations Assessment 2A "How Many Degrees?"</i></p>	<p><i>Investigations Unit 4; Investigation 3</i></p>	<p>Acute angle Obtuse angle Right angle</p>
	<p>CCSS.Math.Content.4.MD.C.5.b</p> <p>An angle that turns through n one-degree angles is said to have an angle measure of n degrees.</p>	<p><i>Investigations Assessment 2A "How Many Degrees?"</i></p>	<p><i>Investigations Unit 4; Investigation 3</i></p>	<p>Circle Reflex angle</p>
	<p>CCSS.Math.Content.4.MD.C.6</p> <p>Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.</p>	<p><i>Investigations Assessment 2A "How Many Degrees?"</i></p>	<p><i>Investigations Unit 4; Investigation 3</i></p>	<p>Protractor Inner scale Outer scale</p>
	<p>CCSS.Math.Content.4.MD.C.7</p> <p>Recognize angle measure as additive. When an angle is decomposed into</p>	<p><i>Investigations Assessment 2B "Building</i></p>	<p><i>Unit 4; Investigation 3</i></p>	<p>Complementary angles Supplementary angles</p>

	<p>non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure.</p>	<i>AnglesInvestigations</i>		
--	--	-----------------------------	--	--

Geometry

	Common Core State Standard	Assessment	Resources	Vocabulary
	<p>Draw and identify lines and angles, and classify shapes by properties of their lines and angles.</p> <p>CCSS.Math.Content.4.G.A.1</p> <p>Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.</p>	<p><i>Investigations Unit 4</i> <i>Assessment: "What is a Quadrilateral?"</i></p>	<p><i>Investigations Unit 4;</i> <i>Investigation 2</i></p>	<p>Perpendicular parallel</p>
		<p><i>Investigations Unit 4</i></p>	<p><i>Investigations Unit 4;</i></p>	<p>Polygon</p>

	<p><u>CCSS.Math.Content.4.G.A.2</u> Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.</p>	<p><i>Assessment: “What is a Quadrilateral?”</i></p>	<p><i>Investigation 2</i></p>	<p>Triangle Isosceles triangle Scalene triangle Right triangle Equilateral triangle Rectangles Square Trapezoid Rhombus Parallelogram</p>
	<p><u>CCSS.Math.Content.4.G.A.3</u> Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.</p>	<p><i>Blue Ribbon Testing</i> <i>End-of-Year Geometry</i> <i>domain</i></p>	<p><i>Investigations Unit 4;</i> <i>Investigation 4</i></p>	<p>Symmetry Line of Symmetry Congruence</p>

EngageNY:Grade 4 Module 6: Decimal Fractions

Websites:

<http://harcourtschool.com/activity/elab2004/gr4/8.html>

<http://harcourtschool.com/activity/elab2004/gr4/9.html>

<http://harcourtschool.com/activity/elab2004/gr4/10.html>

<http://harcourtschool.com/activity/elab2004/gr4/11.html>

<http://harcourtschool.com/activity/elab2004/gr4/12.html>

<http://www.arcademics.com/games/dirt-bike-comparing-fractions/dirt-bike-comparing-fractions.html>

<http://illuminations.nctm.org/Activity.aspx?id=4148>

<http://nrich.maths.org/1249>

<http://www.bbc.co.uk/skillswise/topic/fractions>

http://www.abcya.com/fraction_fling.htm

<http://www.ictgames.com/equivalence.html>

Resources:

***Investigations* Unit 6 Fraction Cards, Investigations 1 and 2**

“Capture Fractions” game from *Investigations*

“Fill 2” game from *Investigations*

Resources

“Guess My Rule” game from *Investigations* Unit 4

Anglelegs

Rectangle vs. Parallelogram game (NCTM)

Websites:

<http://www.crickweb.co.uk/ks2numeracy-tools.html#angle>

<http://harcourtschool.com/activity/elab2004/gr4/19.html>

<http://illuminations.nctm.org/Activity.aspx?id=3581>

